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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

PAUL, DISLER

ART UNIT

PAPER NUMBER

2615

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/584,672	Applicant(s) KONAGAI ET AL.	
	Examiner DISLER PAUL	Art Unit 2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Response to Amendment

The newly amended claims with the “ directivity control circuit for controlling a delay setting for each of the delay circuits based on a desired focal position of a sound wave beam to be directed to and a position of each of the speaker units, wherein each of the speaker units receives a set of delay from one of the delay circuits to emit[[s]] a plurality of sounds from the speaker units in accordance with adjusted sound signals in different directivities” have been analyzed and rejected in view of Sasaki (US 2005/0271230 A1).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki (US 2005/0271230 A1) and Grimani (US 6,498,852 B2) and Yeap (US 4,118,601).

Re claim 1, Sasaki disclose of the audio output apparatus comprising: a sound level adjusting unit that adjusts gains and an array speaker unit having a plurality of speaker units and a delay circuit for each of the adjusted sound signals, and a directivity control circuit for controlling a delay setting for each of the delay circuits based on a desired focal position of a sound wave beam to be directed to and a position of each of the speaker units, wherein each of

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the speaker units receives a set of delay from one of the delay circuits to emit a plurality of sounds from the speaker units in accordance with adjusted sound signals in different directivities (fig. 10 wt (52,51,41); par [0068-0070,0073-0075]/ gain and delay adjusted so as to output beam signal across varying directions).

While, Sasaki disclose of the above with sound measuring unit means (fig.11-13); par [0086-0088]); But, Sasaki fail to disclose of the specific wherein having a measuring unit that measures levels of a plurality of inputted sound signals and a adjusting unit that adjust the levels measured by the measuring unit. But, Grimani disclose of an array speaker wherein a measuring unit that measures levels of a plurality of inputted sound signals and a adjusting unit that adjust the levels measured by the measuring unit (fig.2-4 wt (1,2-3); col.3 line 20-55; col.2 line 10-30) for the purpose of detecting the condition of the main channel and creating the desired sound effect. thus, taking the combine teaching of Sasaki and Grimani as a whole, it would have been obvious for one of the ordinary skill in the art to have modify Sasaki with the measuring unit that a measuring unit that measures levels of a plurality of inputted sound signals and a adjusting unit that adjust the levels measured by the measuring unit for the purpose of detecting the condition of the main channel and creating the desired sound effect.

However, the combined teaching of Sasaki and Grimani as a whole, failed to disclose of the adjusting the gain so that the sound signals have equal magnitudes. But, Yeap disclose of a system of sound equalization wherein the similar concept of adjusting the gain so that the sound signals have equal magnitude (fig.2 wt (40,42); col.4 line 5-17) for the purpose of preventing the resonant conditions from suppressing sound frequencies generated. Thus, taking the combined teaching of Sasaki and Grimani and Yeap et al. as a whole, it would have been obvious for one

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of the ordinary skill in the art at the time of the invention to have modify the combined teaching of Sasaki and Grimani as a whole, by incorporating the concept of adjusting the gain so that the sound signals have equal magnitude for the purpose of preventing the resonant conditions from suppressing sound frequencies generated.

Re claim 2, the audio output apparatus according to claim 1, However, the combined teaching of Sasaki and Grimani and Yeap as whole, fail to teach of the wherein: the measuring unit separates the sound signals into a plurality of frequency bands to measure levels, and the sound level adjusting unit assigns weights on the measured levels of the frequency bands with a predetermined weight for each of the frequency bands, adjusts the gains based on the weighted levels of the individual frequency bands, and so that the sound signals are in equal magnitudes. However, Yeap disclose of a system wherein the measuring unit separates the sound signals into a plurality of frequency bands to measure levels, and the sound level adjusting unit assigns weights on the measured levels of the frequency bands with a predetermined weight for each of the frequency bands, adjusts the gains based on the weighted levels of the individual frequency bands, and outputs the sound signals are in equal magnitudes (fig.2 (40,42); col.4 line 1-16/ all the channels (a,b,c) are to be adjusted at same weight with individualized frequency bands) for the purpose of creating desired sound perception of room effect. Thus, taking the combined teaching of Sasaki and Grimani and Yeap (new teaching) as whole, it would have been obvious for one of the ordinary skill in the

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art at the time of the invention to have incorporated the measuring unit separates the sound signals into a plurality of frequency bands to measure levels, and the sound level adjusting unit assigns weights on the measured levels of the frequency bands with a predetermined weight for each of the frequency bands, adjusts the gains based on the weighted levels of the individual frequency bands, and outputs the sound signals are in equal magnitudes for the purpose of creating desired sound perception of room effect.

Re claim 3 has been analyzed and rejected with respect to claim 2 above.

Re claims 4, has been analyzed and rejected with respect to claim 1.

3. Claims 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki (US 2005/0271230 A1) and Grimani (US 6,498,852 B2).

Re **claim 5**, Sasaki disclose of the audio output apparatus comprising: a sound compression unit that compresses a plurality of dynamic ranges of the sound signals and outputting a plurality of sound signals after the dynamic ranges are compressed and an array speaker unit having a plurality of speaker units and a delay circuit for each of the adjusted sound signals, and a directivity control circuit for controlling a delay setting for each of the delay circuits based on a desired focal position of a sound wave beam to be directed to and a position of each of the speaker units, wherein each of the speaker units receives a set of delay from one

of the delay circuits to emit[[s]] a plurality of sounds from the speaker units in accordance with adjusted sound signals in different directivities (fig. 10 wt (52,51,41); par [0068-0070,0073-0075]/ gain and delay adjusted so as to output beam signal across varying directions).

Sasaki further disclose of the inherent feature of having the sound signal compressed to a predetermined value or below (fig,10, par [[0069]/input may be adjusted by controller).

While, Sasaki disclose of the sound measuring means and compressions (fig.11-13); par [0086-0088]); But, Sasaki fail to disclose of the specific wherein having a measuring unit that measures levels of a plurality of inputted sound signals and a compression unit that compress the levels measured by the measuring unit. But, Grimani disclose of an array speaker wherein a measuring unit that measures levels of a plurality of inputted sound signals and a compression unit that compress the levels measured by the measuring unit (fig.2-4 wt (1,2-3); col.3 line 20-55; col.2 line 10-30/with attenuation frequency after measuring) for the purpose of detecting the condition of the main channel and creating the desired sound effect. thus, taking the combine teaching of Sasaki and Grimani as a whole, it would have been obvious for one of the ordinary skill in the art to have modify Sasaki with the measuring unit that measures levels of a plurality of inputted sound signals and a compression unit that compress the levels measured by the measuring unit for the purpose of detecting the condition of the main channel and creating the desired sound effect.

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki (US 2005/0271230 A1) and Yeap (US 4,118,601).

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Re claim 6, Sasaki disclose of the audio output apparatus comprising: and an array speaker unit having a plurality of speaker units and a delay circuit for each of the sound signals, and a directivity control circuit for controlling a delay setting for each of the delay circuits based on a desired focal point of a sound wave beam to be directed to and a position of each of the speakers units (fig.10 wt (51-52,41); par [0068-70]).

But, Sasaki fail to disclose of the having a frequency control unit that limit or emphasizes a frequency bands of a plurality of input sound signals. But, yeap disclose of a system wherein the concept of having a frequency control unit that limit or emphasizes a frequency bands of a plurality of input sound (fig.2 wt (40); col.3 line 5-30) for purpose of providing flat frequency response for the designated desired operating signal spectrum, thus, taking the combined teaching of Sasaki and Yeap as a whole, it would have been obvious for one of the ordinary skill in the art to have modify Sasaki with the et would have been obvious for one of the ordinary skill in the art to have modify Sasaki with the frequency control unit that limit or emphasizes a frequency bands of a plurality of input sound signals for purpose of providing flat frequency response for the designated desired operating signal spectrum.

The combined teaching of Sasaki and Yeap as a whole, further disclose of the wherein the array speaker control by the frequency control and each of the speaker units receives a set of delay from one of the delay circuits to emit[[s]] a plurality of sounds from the speaker units in accordance with the plurality of the sound signals outputted from controlled by the frequency control unit in different directivities (fig. 10 wt (52,51,41); par [0073-0075]).

5. Claims 7 -10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki (US 2005/0271230 A1) and Aylward (US 6,240,189 B1).

Re claim 7, Sasaki disclose of the audio output apparatus comprising: a sound level adjustment unit that adjust the level of the sound signals and an array speaker unit having a plurality of speaker units and a delay circuit for each of the adjusted sound signals, and a directivity control circuit for controlling a delay setting for each of the delay circuits based on a desired focal position of a sound wave beam to be directed to and a position of each of the speaker units, wherein each of the speaker units receives a set of delay from one of the delay circuits to emit[[s]] a plurality of sounds from the speaker units in accordance with adjusted sound signals in different directivities (fig. 10 wt (52,51,41); par [0068-0070,0073-0075]/ gain and delay adjusted so as to output beam signal across varying directions).

While, Sasaki disclose of the above with sound measuring unit means (fig.11-13); par [0086-0088]); But, Sasaki fail to disclose of the specific wherein having a measuring unit that measures levels of a plurality of inputted sound signals and a gain control circuit that refer the levels measured by the measuring circuit and sets a gain coefficient to each of the sound signals. But, Aylward disclose of plurality of speakers wherein similar concept of a measuring unit that measures levels of a plurality of inputted sound signals and a gain control circuit that refer the levels measured by the measuring circuit and sets a gain coefficient to each of the sound signals (fig.2-4 wt (12,24,26,28)); col. 5 line 25-36;) for the purpose of producing constructing interference signal and producing bass signal for sound effect. thus, taking the combine teaching of Sasaki and Ayward as a whole, it would have been obvious for one of the ordinary skill in the art to have modify Sasaki with the measuring unit that measures levels of a plurality of inputted sound signals and a gain control circuit that refer the levels measured by the

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measuring circuit and sets a gain coefficient to each of the sound signals for the purpose of producing constructing interference signal and producing bass signal for sound effect.

Re claim 8, the audio output apparatus according to claim 7, wherein the gain control unit sets the gain coefficient so that the plurality of the levels of the sound signals inputted is nearly equal to each other (fig.2; col. 5 line 25-36).

Re claim 9, the audio output apparatus according to claim 7, wherein the gain control unit includes an offset generating circuit which adds a certain amount of an offset amount to at least one level among the levels measured by the measuring circuit (fig.2; col.4 line 10-55).

Re claim 10, the audio output apparatus according to claim 7, wherein the gain control unit sets the gain coefficients so that dynamic ranges of the sound signals input to the array speakers unit are made to have a predetermined value or below (col.6 line 45-65/determined gains).

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6. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki (US 2005/0271230 A1) and Aylward (US 6,240,189 B1) and Yeap (US 4,118,601).

Re claim 11, the audio output apparatus according to claim 7, But, the combined teaching of Sasaki and Aylward as a whole, fail to disclose of the further comprising a band pass filter to which a plurality of sound signals is inputted and which limits a frequency band of the sound signal. But, Yeap disclose of a system wherein comprising a band pass filter to which a plurality of sound signals is inputted and which limits a frequency band of the sound signal (fig.2 wt (40); col.3 line 5-30) for purpose of providing flat frequency response for the designated desired operating signal spectrum. Thus, taking the combined teaching of Sasaki and Aylward and Yeap as a whole, it would have been obvious for one of the ordinary skill in the art to have modify the combined teaching of Sasaki and Aylward as a whole, with the comprising a band pass filter to which a plurality of sound signals is inputted and which limits a frequency band of the sound signal for purpose of providing flat frequency response for the designated desired operating signal spectrum.

Re claim 12, the audio output apparatus according to claim 11, wherein the sound signal limited in the frequency band by the band pass filter is outputted to the measuring circuit (Yeap, fig.2 wt (40,46,48)).

Re claim 13, the audio output apparatus according to claim 11, wherein the sound signal limited in the frequency band by the band pass filter is outputted to the sound level adjusting circuit (fig.2 wt (40,42); col.3 line 5-10).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DISLER PAUL whose telephone number is (571)270-1187. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. P./
Examiner, Art Unit 2615

/Vivian Chin/
Supervisory Patent Examiner, Art Unit 2615